MITSUBISHI

MULTIPLAY SYSTEM/INTELLIGENT AUDIO SYSTEM MODEL Z-20

INSTRUCTION BOOK/NOTICE D'UTILISATION

Congratulations on your choice of the Mitsubishi Multiplay System/Intelligent Audio System Model Z-20.
For the best performance results, please read this instruction book carefully before use.

WARNING—TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

For future reference a space has been provided below for the recording the serial number of your audio system model Z-20.

Serial No.

Wir beglückwünschen Sie zum Kauf des Mitsubishi Multiplay System/Intelligentes Audio-System Modell Z-20. Bitte lesen Sie diese Bedienungsanleitung vor der Benutzung des Gerätes sorgfältig durch, damit sie in den Genuß seiner vollen Leistung kommen.

WORSICHT: WEGEN DER GEFAHR VON FEUER ODER ELEKTRISCHEN SCHLÄGEN IST DAS GERÄT VOR REGEN UND FEUCHTIGKEIT ZU SCHÜTZEN.

Tragen Sie bitte die Seriennummer Ihres Gerätes in das freigelassene Kästchen unten ein, damit Sie später leicht darauf zurückgreifen können.

Seriennummer

Vous êtes devenu l'heureux propriétaire SYSTÈME MULTIPLAY/SYSTÈME AUDIO INTELLIGENT "Mitsubishi Z-20" et nous vous en félicitons. Veuillez lire attentivement cette notice d'utilisation, avant d'emploi de cet ensemble stéréophonique de haute qualité, pour que vous puissiez jouir pleinement de ses performances.

ATTENTION: EN RAISON DU DANGER D'INCENDIE OU DE DÉCHARGES ÉLECTRIQUES, IL FAUT PROTÉGER L'APPAREIL CONTRE LA PLUIE ET L'HUMIDITÉ.

Inscrivez le numéro de série de système autio modèle Z-20 dans la case libre ci-dessous, de manière à ne pas l'oublier, par la suite.

Numéro de série

Enhorabuena por haber seleccionado el sistema de reproducción múltiple/systema inteligente de audio Z-20 de Mitsubishi.
Para obtener el mejor rendimiento posible, lea atentamente este manual de instrucciones antes de poner el aparato en funcionamiento.

AVISO—PARA EVITAR INCENDIOS Y DESCARGAS ELECTRICAS, NO EXPONER ESTE APARATO A LA LLUVIA NI A LA HUMEDAD.

Para futuras referencias, se ha dejado un espacio en blanco abajo para anotar el número de serie de su systema de audio modelo Z-20.

N° de serie

Hartelijk dank voor de aanschaf van dit Mitsubishi multiplay intelligent audio-system Z-20.
Lees de gebruiksaanwijzing aandachtig door alvorens het apparaat in gebruik te nemen.

WAARSCHUWING—STEL HET APPARAAT NIET BLOOT AAN REGEN OF VOCHT OM BRAND OF EEN GEVAARLIJKE ELECTRISCHE SCHOK TE VOORKOMEN.

Noteer in het onderstaande vakje het serienummer van uw audio system model Z-20. Dit nummer heeft u naderhand misschien nodig.

Serienummer:

Vi gratulerar dig till valet av Mitsubishis Flerkomponents mångsidiga musiksystem/Logiska programmerbara ljudsystem Modell Z-20.
Studera denna bruksanvisning noga innan apparaten tas i bruk, så att du helt kan utnyttja alla dess finesser.

VARNING: FÖR ATT UNDVIKA BRANDFARA ELLER ELEKTRISKA ÖVERSLAG SKALL APPARATEN SKYDDAS FÖR FUKT OCH VÄTA.

Notera gärna apparatens serienummer i den fria rutan, så har du den lätt till hands vid framtida behov.

Serienr:

Connect the speakers and antennas as illustrated below.
Be sure to switch OFF the POWER supply before you connect these. After completing their connection, check that the VOLUME knob has been turned down to its lowest setting (0) before you attempt to switch the POWER back ON again.

Raccorder l'enceinte (ou les enceintes) et l'antenne comme le représente l'illustration ci-dessous.
Avant de les raccorder, placer la touche d'alimentation (POWER) sur OFF. Après avoir terminé les raccordements, s'assurer que le bouton de VOLUME a été réglé sur la position minimum (0) avant de remettre la touche d'alimentation (POWER) sur ON.

Mount to a post or wall (etc).
Le monter sur un pilier, un mur etc.

Remove the double-face tape separator.
Retirer le séparateur du ruban double face.

Loop antenna holder (Accessory)
Support d'antenne cadre (accessoire)

Look for a position allowing favorable reception.
Rechercher la position assurant une bonne réception.

AM Loop Antenna
The unit is packed with the AM loop antenna taken off from the chassis. Mount the holder first as shown in the illustration and then connect to the antenna terminal. To receiving AM broadcasts, select the desired station first and then move the loop antenna in the appropriate direction and position to achieve optimum reception conditions.
If no satisfactory reception can be obtained while attached to the chassis, peel off the double-face separator on the loop antenna supplied as a standard accessory to allow it to be used mounted to a post or wall (etc.).

Antenne cadre AM
L'appareil est emballé avec l'antenne cadre AM retirée du châssis. Monter tout d'abord le support comme le représente l'illustration, puis la raccorder à la borne d'antenne. Pour écouter une émission AM, choisir tout d'abord la station désirée et déplacer l'antenne cadre dans la direction et sur la position assurant les meilleures conditions de réception.
Si l'on ne peut obtenir une bonne réception avec l'antenne sur le châssis et s'il n'y a pas d'espace derrière celui-ci, retirer le séparateur du ruban double-face de l'antenne cadre fourni comme accessoire standard et monter l'antenne sur un pilier, un mur etc.

Look for a position allowing favorable reception.
Rechercher la position assurant la meilleure réception.

Outdoor AM Antenna
Antenne AM extérieure
5—12 m
to AM ANT. terminal
Borne de l'antenne AM

- Remain AM Loop Antenna connected when applying outdoor AM antenna.
- Déconnecter l'antenne AM intérieure si vous utilisez une antenne extérieure.

Outdoor FM Antenna
Antenne MF extérieure
75 ohms coaxial cable
300 ohms flat twin-lead
Antenne plate 300 ohms
Antenne coaxiale 75 ohms

External Tape Deck
Enregistreur à cassette ext.

Compact Disc Player etc.
Lecteur de Disque Compact, etc.

Antenna terminal
Borne d'antenne

External recording output terminal (REC OUT)
Borne de sortie d'enregistrement extérieur (REC OUT)

Loop antenna holder
Support d'antenne cadre

External input terminal (CD/AUX)
Borne d'entrée extérieure (CD/AUX)

Supplied "T-shaped" Antenna
Antenne d'intérieure fournie
FM antenna supplied with this unit.
Antenne MF fournie avec l'appareil.

Speaker system/Enceinte acoustique
(Left speaker) (Enceinte gauche)
(Right speaker) (Enceinte droite)

Speaker terminal A
Bornes d'enceintes A
Speaker Terminal B
Bornes d'enceintes B

Power cord
After completeing all connections, insert plug into the POWER socket.
Câble secteur
Après avoir effectué les raccordements, brancher la fiche dans la prise d'alimentation (POWER).

AUXILIARY MEMORY BACKUP BATTERIES
- These batteries are used to ensure the tuner presetting and functions are stored in the even when the POWER supply has been cut off.
- When inserting the batteries supplied as accessory parts, be sure to align their polarities (+) (–) correctly.
- The batteries last for more than a year. (The built-in capacitor will provide a memory backup for 12 hours or more even without the batteries.)
- When the power supply from the batteries fails, the tuner FM presettings will all become 87.5 MHz.

PILES DE PROTECTION DE LA MEMOIRE AUXILIAIRE
- Ces piles empêchent que les données des préréglages du tuner et des fonctions en mémoire ne soient effacées en cas de coupure de l'alimentation.
- Lors de la mise en place des piles fournies comme accessoires, aligner correctement leurs polarités (+) (–).
- Les piles durent plus d'une année. (Le condensateur incorporé protège la mémoire pendant au moins 12 heures même sans piles.)
- Lorsque les piles sont déchargées, les préréglages FM du tuner deviennent tous 87.5 MHz.

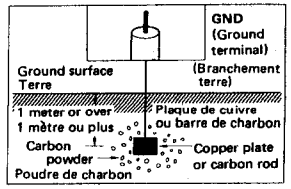


Fig. 7

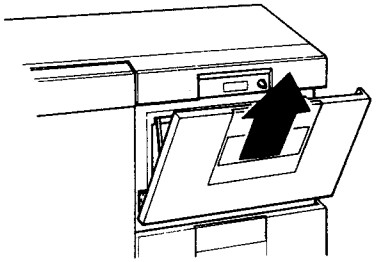


Fig. 1

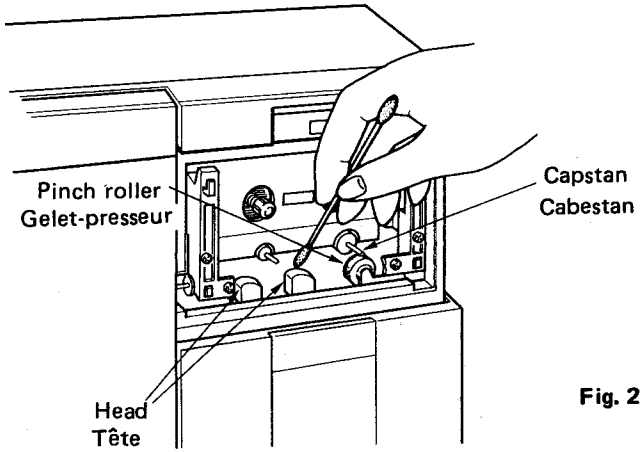


Fig. 2

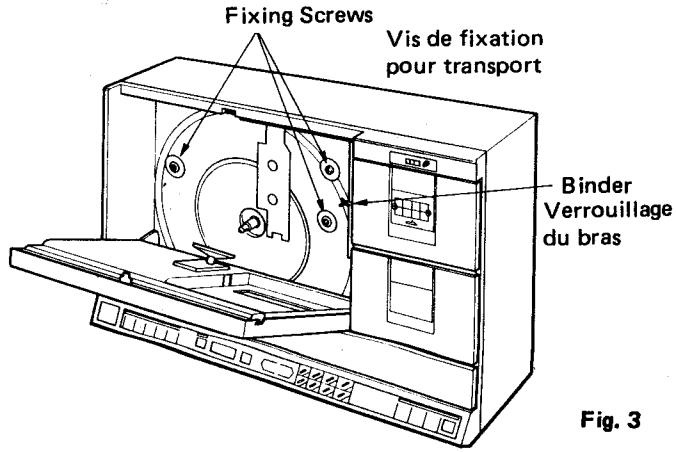


Fig. 3

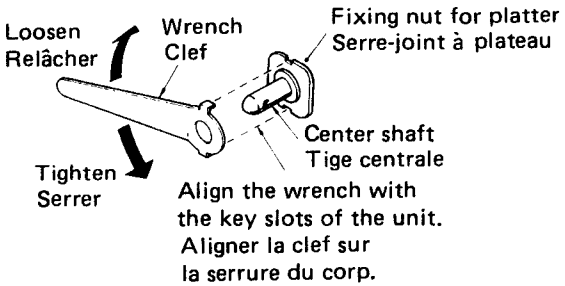


Fig. 4

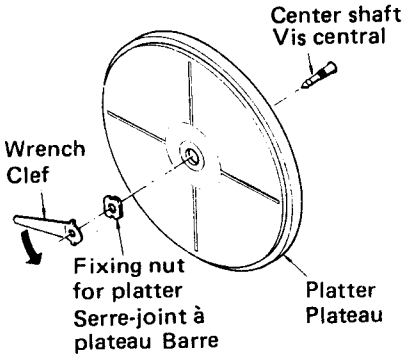


Fig. 5

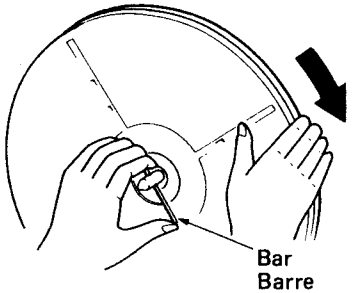


Fig. 6

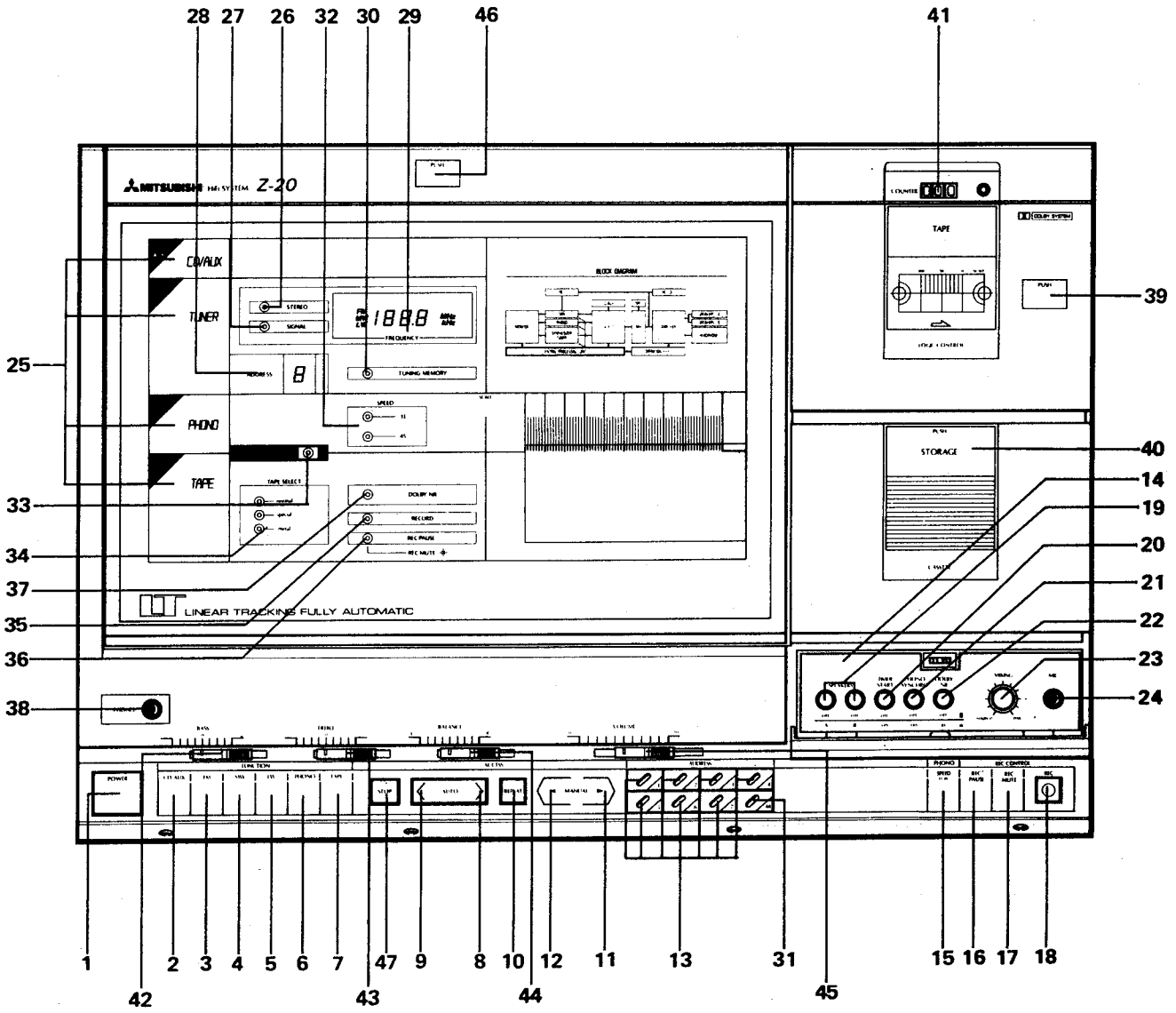


Fig. 8

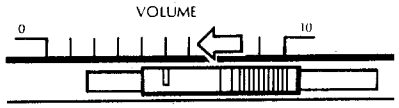


Fig. 9

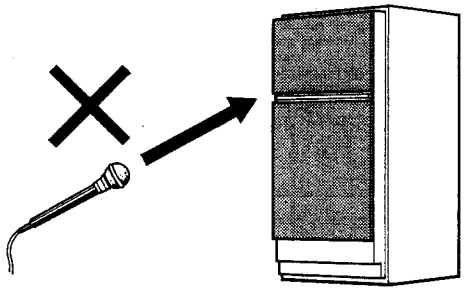


Fig. 10

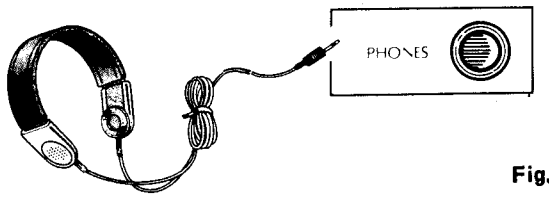
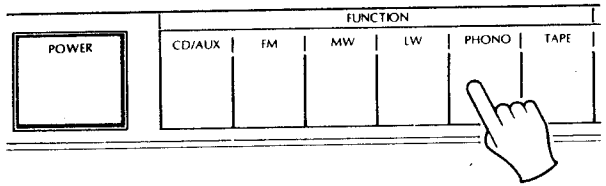


Fig. 11



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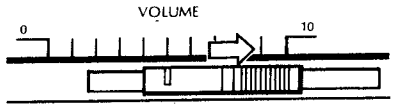


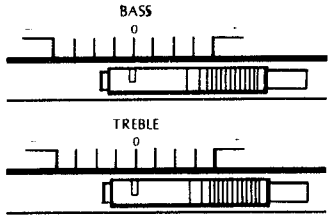


Fig. 13

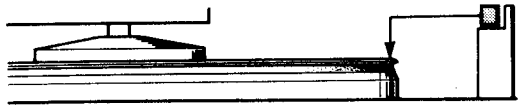


Fig. 14

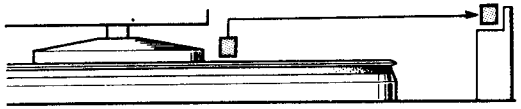


Fig. 15

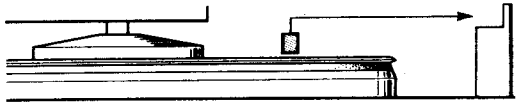


Fig. 16

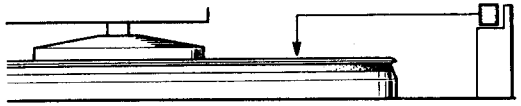


Fig. 17

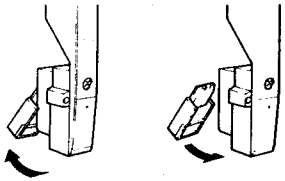
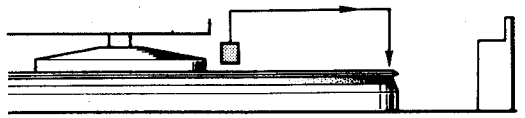


Fig. 18



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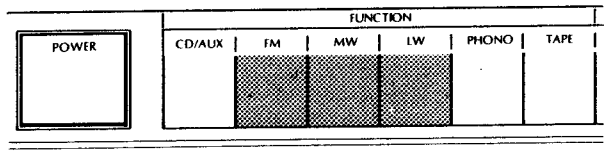


Fig. 20

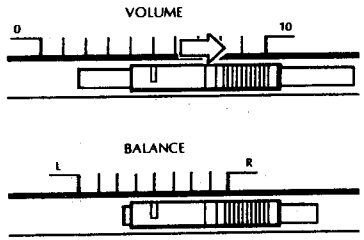


Fig. 21

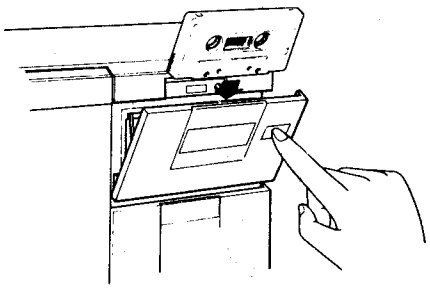
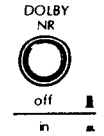


Fig. 22



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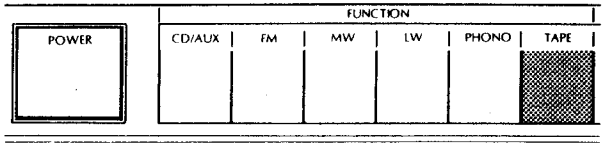

Fig. 24

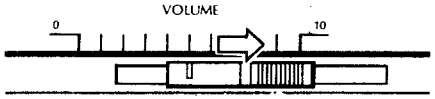

Fig. 25

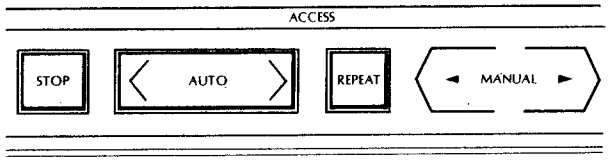

Fig. 26

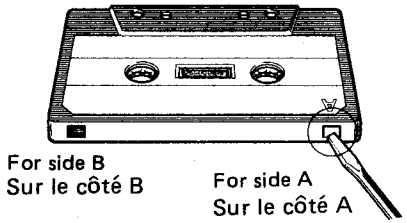

Fig. 27

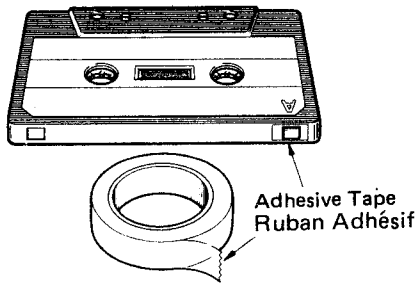

Fig. 28

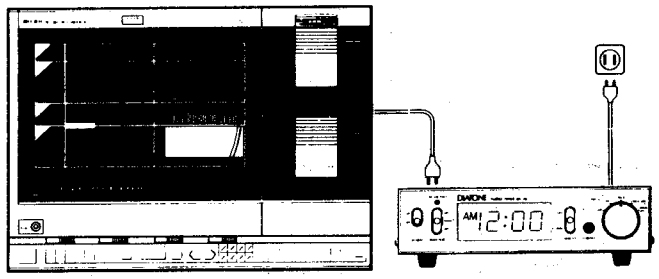

Fig. 29

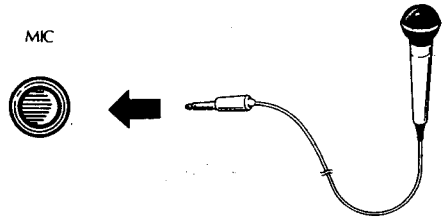

Fig. 30

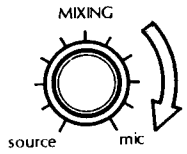

Fig. 31

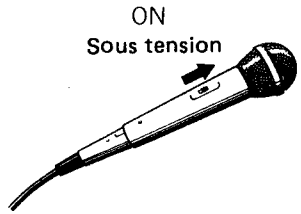

Fig. 32

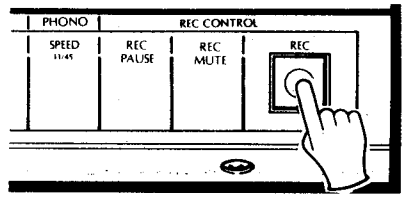

Fig. 33

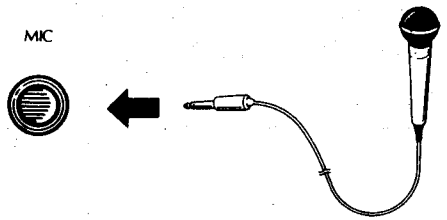

Fig. 34

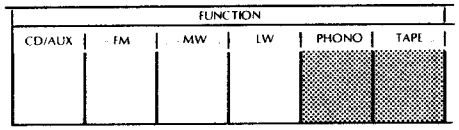

Fig. 35

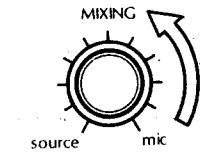

Fig. 36

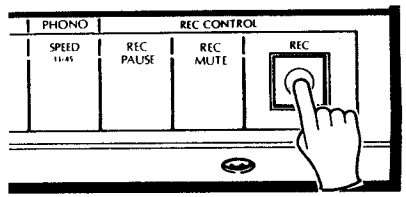

Fig. 37

PRECAUTIONS

ENGLISH

1. GENERAL

- Be sure to use the correct A.C. power source.
- Do not plug in or unplug the power cord with wet hands.
- Handle the power cord with care.
  Do not remove the power plug by pulling on the power cord. If the insulation becomes damaged, the conductor breaks, or poor contacts occur, request service from your authorized service dealer.
- Do not touch the inside of this unit or remove the rear panel.
- Disconnect the power cord at the first sign of trouble.

2. LOCATION

- This unit can become unstable if operated in extremely high or low temperatures. Place it in a well ventilated area for correct heat dissipation.
  Avoid placing in direct sunlight, near air conditioners, poorly ventilated areas or in areas of excess humidity or dust. Do not block the ventilation holes in the cabinet.
- Howling sounds (Acoustic Feedback) may occur if this unit is in direct contact with the speakers.
  Be sure to leave an appropriate space between the speakers and the side of this unit.

3. CONNECTIONS

- Be sure to turn off the power before making connections.
- Use extreme care in making the correct connections. Reversing the R (right) or L (left) speaker leads or plus (+) and minus (—), will lead to poor sound quality.
- Make all connections securely.
- Use speakers with a nominal impedance of 8 to 16 ohms. (When connecting one pair of speakers connected to the A or B terminals).
- When using two pairs of speakers, ensure that the combined impedance (both pairs of speakers operating) is 8 ohms or above.

The combined impedance is determined using the following formula.

$$\text{COMBINED IMPEDANCE} = \frac{A \times B}{A + B} \text{ (OHMS)}$$

$$\text{e.g. } \frac{16 \times 16}{16 + 16} = 8 \text{ (ohms)}$$

A: Nominal impedance of speaker A.
B: Nominal impedance of speaker B.

- Do not supply excessive input to the speakers.
  When using speakers with a lower power handling capacity than the rated output power of this unit (20 W/ch), avoid excessive volume levels.

4. OPERATION

- Before placing the power switch in the ON or OFF position, always set the volume control to the minimum level.
- Do not touch the turntable platter while it is rotating.
- Do not touch the tonearm when it's moving.

5. CARE

- Do not play badly soiled discs.
- Be sure to close the dust cover on the turntable when it is not in use.

6. CASSETTE DECK MAINTENANCE

(1) CLEANING OF HEADS

Deposit of dust and dirt cause poor contact between the heads and tape and will lead to:

- Deteriorating tone quality.
- Reduced volume.
- Failure to record.
- Erratic reproduction of sounds (sounds disappear momentarily).
- Failure to erase previously recorded sounds.

Although the heads should be cleaned at least once in every 10 hours use, to obtain best recording and playback performance, it is recommended to be cleaned every time the deck is used.

CLEANING MATERIALS

Cotton Q-tips, or a soft cloth such as gauze and pure alcohol or tape head cleaning fluid.

PROCEDURE

1. Push to open the cassette holder.
2. Remove the cassette cover as shown. (Fig. 1)
3. Carefully wipe all tape-contacting sections as the heads, pinch roller and capstan. (Fig. 2)
4. Re-fit the outside cover to its original position.

- Do not insert a cassette until the alcohol has completely evaporated.
- Another cleaning method is to clean by utilizing a cleaning tape.
  In this case, just run the tape through once.

(2) DEMAGNETIZING THE HEADS

The heads can become magnetized after long period of use. This can cause excessive tape hiss and a loss of high frequencies. The heads should be demagnetized periodically after about 30 hours of playing or recording.

1. Use a commercially available head-demagnetizer according to its instructions.
2. Turn off the power switch.
3. Remove the cassette cover.
4. Turn on the power to the head-demagnetizer and bring the tip of the head-demagnetizer close to the heads and capstan, and slowly move it up and down four or five times.
5. Slowly remove the head-demagnetizer from the heads to a distance of more than 30 cm (12") and switch the power off.
6. Attach the cassette cover again.
   NOTE:
   This unit requires no lubrication. Lubrication will cause malfunction, and may cause permanent damage.

ASSEMBLY AND CONNECTIONS

7. CLEANING THE CABINET

When dust and dirt, etc. are deposited on the surface, wipe off using a soft, dry cloth. Do not use volatile agents such as alcohol, thinner, benzine, or insecticides for cleaning.

BE SURE TO SET THE VOLUME CONTROL TO A LOW VOLUME POSITION WHEN THE POWER SWITCH IS TURNED ON OR OFF, OR WHEN CONNECTIONS TO THE FRONT OR REAR PANELS ARE MADE.

ASSEMBLY AND ADJUSTMENT OF TURNTABLE

BEFORE ASSEMBLY

1. Remove the fixing screws used for transport.
2. Take off the clamper and binder used for fixing the tonearm. (Fig. 3)
   - As the fixing screws, clamper and binder are needed in the case of re-transport, please keep them safely.

MOUNTING OF PLATTER

1. The centre shaft is provided with nut to fix the platter in place. Using the supplied wrench, turn the nut clockwise and take it off. (The centre shaft is threaded inversely.) (Fig. 4)
2. Insert the platter into the centre shaft. Firmly secure the platter to the centre shaft by turning the fixing nut counterclockwise. (Fig. 5)
3. Tighten the nut.
4. At the time of repacking the unit, the platter can be removed by manually turning it with the supplied shaft inserted into the centre shaft in a manner for the platter not to be rotated. (Fig. 6)

CONNECTIONS (Fig. 7)

To reduce interference, setting should be made away from the TV or etc., as possible.

FRONT PANEL FUNCTIONS

(Fig. 8)

1. POWER SWITCH

2. CD/AUX
For listening to an external unit (additional CD player or TV tuner, for example) connected to the "CD/AUX" terminals on the rear panel.

3. FM
For listening to FM broadcasts, depress the FM button.

4. MW
For listening to MW broadcasts, depress the MW button.

5. LW
For listening to LW broadcasts, depress the LW button.

6. PHONO
When playing a record with the turntable, push this button. The tonearm will swing over to the outer groove of the record and commence to play.

7. TAPE
When playing a tape with the cassette deck, push this button.

8. (>) AUTO
In case of TUNER, when this button is depressed, the reception frequencies are swept continuously up the scale until a frequency of a station actually broadcasting is reached. The sweeping then stops automatically.
In case of TAPE, when this button is depressed, the tape will fast forward wind to the next musical number and restart play automatically.

9. (<) AUTO
In case of TUNER, when this button is depressed, the reception frequencies are swept continuously down the scale until a frequency of a station actually broadcasting is reached.
The sweeping then stops automatically.
In case of TAPE, when this button is depressed, the tape will fast rewind to the edge of present musical number and restart play automatically.

10. REPEAT
Depressed when the disc or tape is to be repeatedly.
In this case, the repeat indicator is illuminated.

11. (▶) MANUAL
In the case of TUNER, when depressing this button, the reception frequency on FM changes to 50kHz and on AM to 9KHz. Keeping this button depressed causes the frequency to change continuously while the button is being held down. Release the button as you come near the desired frequency and select the final frequency by pressing the button once at a time.
In case of TAPE, when this button is depressed, the tape will fast forward wind. For restarting the play, you must push the TAPE button.
In case of PHONO, when this button is depressed, it will cause tonearm to be moved backward the edge of the disc. When released, the tonearm will lower onto the disc and start to play.

12. (◀) MANUAL
In case of TUNER, when this button is depressed in the same way as for the UP button, the reception frequency is lowered.
In case of TAPE, when this button is depressed, the tape will rewind. For restarting the play, you must push the TAPE button.
In case of PHONO, when this button is depressed, it will cause tonearm to be moved toward the center of disc. When released, the tonearm will lower onto the disc and start to play.

13. ADDRESS
Dpress these buttons when tuning a preset station or call out the station.
To call out an FM station, set the function button to FM and then depress the appropriate address button (1–7).
To call out an MW station, set the function button to MW and then depress the appropriate address button (1–4).
To call out an LW station, set the function button to LW and then depress the appropriate address button (1–3).

14. Compartment lid

15. 33/45 (SPEED)
This button is used for selecting the rotational speed by manual operation. The speed is shown by the speed indicator.

16. REC PAUSE
Press this button to temporarily stop the tape when recording is restarted.

17. REC MUTE
By pressing this button during recording or REC PAUSE or STOP, it is possible to produce about five minutes non-recording portion of the tape.

18. REC
Depress this button to make recording.

19. SPEAKERS (Speaker Selection Switch)
These switches control speaker selection.

A	B	
■	■	Outputs are off and no sound will be produced from the speakers.
▬	■	For listening to the speakers connected to the terminals A.
■	▬	For listening to the speakers connected to the terminals B.
▬	▬	For listening to the speakers connected to the terminals A and B.

20. TIMER START
Using a commercial timer, you can automatically record or playback with a tape deck or play record or listen to broadcast at a pre-set time.

21. PHONO SYNCHRO
To start the tape recording automatically in coordination with turntable operation, perform.
1) Press the REC PAUSE button.
2) Press the PHONO button to operate the turntable. When the tonearm is lowered onto the record, the tape deck's PAUSE will automatically be released and recording starts.

22. DOLBY NR (Dolby Noise Reduction Switch)
Set this switch to the "in" position for recording with Dolby NR. In this case, be sure to set this switch to the "in" position in playback. Similarly, when you record with this switch set to the "out" position, play the tape with the same switch setting.

23. MIXING (Mixing Balance Control)
Rotation clockwise, cause the microphone volume to be increased, rotation counterclockwise, cause the program source volume to be increased.
When rotation fully counterclockwise, permit listening to the program source alone.

24. MIC (Microphone Jack)
Use microphone of the low impedance.

25. FUNCTION DISPLAY
Display the input program source chosen by the FUNCTION buttons.

26. STEREO (FM Stereo Indicator)
Illuminates to indicate reception of FM stereo broadcasts.

27. SIGNAL
When proper tuning to the desired broadcasting station has been achieved, this indicator illuminates.

28. ADDRESS (Preset Channel Indicator)
This display express the numerical value of the preset channels.

29. FREQUENCY (Frequency Digital Display)
This display express the numerical value of the receiving frequency.

30. TUNING MEMORY
This indicator shows that the memory is ready in standby mode.

31. MEMORY
When this button is pressed, the TUNING MEMORY indicator illuminates for about 4 seconds.
To preset a particular broadcasting station in the memory, first tune to the desired frequency and then while the TUNING MEMORY indicator remains, press a suitable ADDRESS button.

32. SPEED
This indicator shows the rotational speed of the turntable.

33. REPEAT
When REPEAT button is depressed to play the disc or tape repeatedly, this indicator is illuminated.

34. TAPE SELECT
When a cassette tape is loaded into the cassette holder, the unit detects the type of tape, automatically switching the bias/equalizer according to the characteristic of the tape.
NORMAL: Indicates that a normal tape is loaded.
SPECIAL: Indicates that a special tape is loaded.
METAL: Indicates that metal tape is loaded.

35. RECORD
Lights when REC (recording button) is depressed.

36. REC PAUSE
Lights when REC PAUSE (temporary stop button) is depressed.
Turns on and off in red when REC MUTE (Recording Muting Button) is depressed and this function is activated.

37. DOLBY NR
Lights when DOLBY NR switch is setting to the "in" position.

38. PHONES (Headphones Jack)
Output terminal for stereo headphones.

39. CASSETTE HOLDER
Depressed to open the cassette holder.

40. STORAGE (Storage for Cassette)
Depressed to open the lid.

41. TAPE COUNTER (Tape Counter/Reset Button)
Can be conveniently used as a reference in program cueing. Depressing this button prior to recording sets the counter to "000". Noting the contents of the recording together with the corresponding count allows cueing to the desired selection.

42. BASS (Bass Control)
This control alters the sound level of the low frequency range on the right and left channels.

43. TREBLE (Treble Control)
This control alters the sound level of the high frequency range control right and left channels.

44. BALANCE (Balance Control)
This control adjusts the balance between the two channels. The sound image is normally balanced at the center, shifted to the right side when this control is moved to the right, and to the left side when moved to the left.

45. VOLUME (Volume Control)
This control adjusts the sound volume from the speakers. The volume is increased by moving to the right, and decreased by moving to the left.

46. DISPLAY and Dust COVER
Push this portion to open the cover. When the cover is open, the turntable will not operate. If the cover is opened during play, the turntable will automatically stop.

47. STOP
This control button is used for stopping the tape, phono and recording.

BEFORE OPERATING

Be sure to move VOLUME control fully to the left when the POWER switch is turned on or off, or when connections to the front or rear panels are made. (Fig. 9)

MIC MIXING
If the microphone is placed near the speaker with the volume high, feedback howling can occur. Reducing the volume level or moving the microphone will eliminate the feedback.

Set the MIXING control to the SOURCE position for normal playback of all sources. (Fig. 10)

For private listening, insert the headphones plug into the PHONES jack, and set the Speaker Selection Switches (A, B) to the "off" position to shut off the sound from the speakers. (Fig. 11)

PLAYING DISCS

Push the power switch to the ON position. (After approximately five seconds, a BEEP sound can be heard. After this, the following operations should be performed.)

Place the record onto the platter. (Fig. 12)
* Confirm that the dust cover is locked. If the dust cover is unlocked, the turntable is not operate.
  Press the PHONO button. The tonearm will swing over to the outer groove of the record and commence to play.

Turntable operation will be described in detail in the next section.
* This unit will automatically play 7" (17 cm) and 12" (30 cm) records and automatically select the correct speed.

Adjust the volume with VOLUME control and the tone with the tone controls BASS and TREBLE to suit your taste. (Fig. 13)

TO START PLAY (Fig. 14)

Press the PHONO button. The button is released after pressing as the circuit will be engaged immediately.
The platter will begin to turn the correct speed to suit the type of record on the platter.
The tonearm will move horizontally toward the inside.
When it reaches the outer groove of the record, it will stop and quietly lower on the record to commence playing the music.

- **To Play 25 cm (10 in.) Record**

Keep the MANUAL button (◀) depressed until the tonearm reaches the LEAD-IN groove on the record surface. Then release the MANUAL button, then the tonearm down to the record surface.

- **Records which cannot be played on auto**

The following records cannot be played in the regular automatic mode.
- Transparent records.
- Coloured records (red, green or yellow).
- Badly warped records.
- Records not conforming to RIAA standard.

When you play a transparent record or a coloured record, place the black sheet (supplied with this unit) between the record and the platter.

- **Selection of Rotation Speed**

This turntable automatically changes its speed as follows to suit the record size being played. The speed indicator will illuminate to show the speed being played.
30 cm (12 in.) Record . . . . 33 RPM
17 cm (7 in.) Record . . . . 45 RPM
If the recorded speed is different from the above or when you play a record whose size is different from the above, press the speed reset button to change the speed.

END OF PLAY (Fig. 15)

When play is over, the tonearm quietly lifts and returns to the arm rest and the platter stops its rotation.

STOP (Fig. 16)

Depress the STOP button.
To stop play mid-way through a record, press the STOP button. The tonearm will return to the arm rest and the platter will stop its rotation.

TO START PLAY IN THE MIDDLE OF A DISC (Fig. 17)

To begin listening at a particular spot on the record instead of starting at the beginning, follows these steps:
1. Press the PHONO button and press the MANUAL button (◀) and continue to press. The tonearm will move toward the center of the record.
   Release the MANUAL button (◀) when the stylus reaches the desired place on the record and the tonearm will stop its movement immediately. If the tonearm has moved past the desired spot, release the MANUAL button (◀) and press the MANUAL button (▶). The tonearm will move in the opposite direction at a low

speed while pressing the MANUAL button (▶).
2. When the stylus reaches the desired place on the record, release the MANUAL button (◀ or ▶), and the tonearm will lower itself onto the record surface and play will start.

HOW TO USE GAUGES

Read the disc gauge that corresponds to the desired location on the disc first, and then move the tonearm to the corresponding position on the gauge.

STYLUS REPLACEMENT

(1) Remove the stylus from the cartridge by holding it between the fingers and pulling off to the direction as shown on Fig. 18.
(2) When replacing a new stylus, carefully insert the stylus into the cartridge and fix the stylus on the cartridge.
* Switching the power supply off after moving the tonearm slightly to the left makes it easier to change the needle.

REPEAT PLAY (Fig. 19)

Press the repeat button to hear the same record repeatedly. The repeat indicator will light and when play is finished, the tonearm will lift, return to the outer groove of the .continue to be repeated as long as the repeat indicator is illuminated. To cancel play-repeat, press the repeat button again. Play-repeat will also be cancelled when play is stopped by pressing the stop button.

- Do not operate REPEAT play for 10" (25 cm) records.
- Cause the tonearm to return to the tonearm rest by operating the MANUAL (▶) control. After this, use the MANUAL (◀) control to start playing the record. Remember that no repeat play function is available.

LISTENING TO BROADCAST

Push the power switch to the ON position. (After approximately five seconds, a BEEP sound can be heard. After this, the following operations should be performed.) (Fig. 20)

Press the FM, MW or LW button.

MANUAL TUNING

Depress either the MANUAL (▶) or MANUAL (◀) until the frequency of the desired station appears in the FREQUENCY display (29).
The FREQUENCY display is changed in 50 kHz steps in the FM band and in 9 kHz steps in the MW and LW band each time the MANUAL (◀) or MANUAL (▶) depressed. The frequency display will change constantly while either MANUAL (◀) (▶) is depressed. When the frequency of the desired station is approached, release the control and then adjust the frequency by pressing it in single push control operations.

AUTO TUNING

By depressing the AUTO (>) or AUTO (<), the frequency automatically changes upwards or downwards and stops at the next available broadcast station. With a weak broadcast station, the tuner may not stop. For reception of such a station, follow the steps described in the paragraph "MANUAL TUNING".

- Do not select any other functions during auto tuning (while frequency is being varied). When tuner has again being selected, it may happen that normal operation can not be obtained.

PRESET TUNING

1. Tune to the frequency of the desired broadcasting station by manual or auto tuning method.
2. Press the MEMORY button (31). The corresponding MEMORY indicator (30) will light up.
3. The MEMORY indicator (30) will remain on for only a short time (about 4 seconds).

During this period, press one of the PRESET buttons (13). That completes the presetting operation for that station. The remaining 6 channels may be used for presetting another 6 stations. (MW; 4 stations, LW; 3 stations)
After completing the presetting operation, any of the preset stations may be tuned automatically by a single push of the relevant PRESET button (13). The selected preset station will be indicated by address indicator (28).
This presetting operation may be repeated any number of times. If a station which has been preset is no longer required and a new station is preferred, simply tune to the new station and preset it in the relevant channel according to the method described above. The previous station will be erased automatically and replaced by the new one.
Select the desired volume level with the VOLUME control. The volume of the left-side and right-side speakers can be adjusted by means of the BALANCE control. (Fig. 21)

TAPE DECK PLAYBACK

Push the power switch to the ON position. (After approximately five seconds, a BEEP sound can be heard. After this, the following operations should be performed.)

Then insert the cassette tape directing the side (A orB) you wish to hear toward you with the tape side downward. (Fig. 22)
Set the DOLBY NR switch so as to match the tape to be played. That is, set it to the IN position for tapes recorded with the DOLBY NR system, and to the OUT position for tapes recorded without DOLBY NR. (Fig. 23)

Start playback by pushing the TAPE button. (Fig. 24)

Select the desired volume with the VOLUME control. (Fig. 25)

HOW TO USE MSS

MSS (Music Select Sensor) can be used usefully when you want to listen to next music or the same music just being played while playing back a music prerecorded tape.
Press the AUTO (>) button when you want to listen to the music immediately after that being played back now. The tape is fast-forward until the beginning of the next music, and then the playback will start automatically.
Press the AUTO (<) button when you want to listen to the same music being played again. The tape is rewound to the beginning of the music, and its playback will resume automatically.
NOTE:
MSS does not operate on the following tapes.

- Tapes on which voice does not continue, such as conversation, etc.

HOW TO REWIND OR FAST FORWARD

Pressing the MANUAL (◀) button causes the tape to be rewound. Press the MANUAL (▶) button to select the fast forward motion of the tape. Press the STOP button at the point you want the tape to stop. The tape will continue to travel as far as its start or end position unless the STOP button is pressed.

REPEAT PLAY PROCEDURE (Fig. 26)

Pressing the REPEAT button causes the REPEAT indicator for repeat play. The tape will be automatically rewound when it reaches the end and start again from the beginning to allow repeat play.
Pressing the REPEAT button once more cancels the repeat function. The repeat function is also cancelled by action on the stop button and by operating the function button. (The REPEAT indicator now extinguishes.)

TAPE DECK RECORDING

RECORDING

Set the turntable, tuner, microphone, etc. depending upon the source (discs, FM broadcast, microphone, etc.) to be recorded. Operate the unit according to the following procedure:

1. Depress the POWER switch to the power on.
2. Load the cassette tape. Tape indicator lights according to the type of the tape used.
3. The DOLBY NR switch is to be set in the IN position for DOLBY NR recordings (The "DOLBY NR" indicator is illuminated), and OUT for non-DOLBY NR recordings.
4. Set the TAPE COUNTER to "000" by depressing the reset button.
5. To record an FM broadcast, select the desired broadcasting station. To record a disc, press the PHONO button of the turntable.
6. Press the REC button.
7. Press the STOP button after the recording is completed. To stop the recording temporarily, depress the REC PAUSE button. To restart the recording, press the REC button.

   When you wish to listen the sound during recording, move the VOLUME control to the right and adjust the volume to the optimum level.

ONE-TOUCH RECORDING

The Z-20 is designed with a one-touch recording system. Record levels are adjusted automatically.

SYNCHRONIZED RECORDING

Please refer to "RECORDING", step 1 – 4 .

5. Press the REC PAUSE button to put the unit into the REC PAUSE mode. This completes the recording preparations at the deck.
6. Depress the "PHONO SYNCHRO" switch to set in the "on" position. When PHONO button is pressed next, the recording will start automatically in coordination with the tonearm movement.

- After finishing playing the record the tonearm lifts and after this, a silent track of approximately five seconds' length is created and the REC PAUSE condition restored.

HOW TO USE REC MUTE BUTTON

In recording music from FM broadcasts, etc., depressing the REC MUTE button interrupts the recording signal can be used to produce a silent space between music selection on the tape as follows:

1. Depress the REC MUTE button when the performance of the music is completed.
2. With the button depressed, a soundless tape section will automatically advance for five seconds.
3. After that the tape is stopped in the PAUSE condition.
4. Depress the REC button to start recording again.

- Every time the arm is raised in the record synchro recording mode, the tape will advance rapidly without recording to make the soundless section.
- If a silent track longer than five seconds is desired, press the button once more while the tape is in motion (i.e., while the indicator is flashing). After pressing the button, another silent track of five seconds' duration is created to extend the silent period. After creating a silent track and after the tape travel has stopped (i.e., after the indicator has stopped flashing), the unit will not operate even when continuing to press this button. (A beeping sound will be heard.) Press after 3 – 4 seconds have passed. Do not open the cassette holder while the REC MUTE or REC PAUSE functions are in use. Opening the holder and closing it again afterwards causes the REC condition to be engaged.

HOW TO USE THE TAPE SELECTOR

To bring out the tape's characteristics to their full potential and to ensure low-distortion, the TAPE SELECTOR is automatically set as shown in the list.

Type of Tape		Position of TAPE SELECT
Manufacturer	Type	
TDK	D, AD, OD	NORMAL
	S, SA-X	SPECIAL
	MA-R, MA	METAL

TAPE DUBBING

Tape dubbing (copying) is possible by connecting another tape deck to the IN and OUT terminal of the Z-20's rear panel.

Dubbing from this tape deck (A) to another (B).

1. Connect the REC OUT (L and R) terminals on the rear panel to the INPUT (L and R) terminals of tape deck B.
2. Dubbing can be carried out by putting the tape deck A in the "PLAY" mode and the tape deck B in the "RECORD" mode, with the FUNCTION positioned to TAPE.

Dubbing from another tape deck (B) to this tape deck (A).

1. Connect the OUTPUT (L and R) terminals of tape deck (B) to the CD/AUX terminals on the rear panel.
2. Dubbing can be carried out by putting the tape deck (B) in the play mode and the tape deck (A) in the record mode, with the FUNCTION selector positioned to CD/AUX.

* Under the conditions mentioned above, if the tape deck (B) is in record mode (together with tape deck (A)) oscillation will occur.

ERASING

Performing new recording on a pre-recorded tape automatically erases the previous recording, allowing the new recording. To erase the previous recording without performing new recording, proceed as follows:

1. Check that erase protect tabs at the rear of the cassette tape to be erased are not broken. If broken, cover the hole(s) with cellophane tape, etc.
2. Press TAPE and then press STOP.
3. Load the tape with the face (A or B) to be erased toward you.
4. Depress the REC button. The tape will now be erased.
5. When the tape comes to the end, the auto stop mechanism will function. If you want to interrupt erasing at any point, depress the STOP button.

ERASE PROTECTION

Cassettes incorporate a convenient erase-protection device to prevent accidental erasure. When the tabs at the rear of the cassette are broken out, the REC button can not be pushed and the erase protection device will be activated to prevent accidental erasure of pre-recorded tapes. (Fig. 27)
If you wish to record on the track on which the tabs have been already broken out, cover the hole with cellophane or vinyl adhesive tape. (Fig. 28)

RECORDING PROTECTION FUNCTION

To protect a recording while it is being made this unit has no other input facilities apart from the STOP button, REC PAUSE button, and REC MUTE button. In designing the unit much thought and care has thus gone into protecting your recording against loss due to depressing the wrong function button.

- When other functions are to be recorded, be sure to press the STOP or REC PAUSE button to stop the recording and switch over to the desired function.
- Synchro recordings can be achieved with MANUAL button.

UNATTENDED RECORDING AND PLAY

With the separately sold audio timer (DC-50 type or similar) you can be woken up by a "musical alarm" with the start of a radio program, a record or tape at whatever time you like or record radio programs in your absence.

Connecting the Timer

As shown in Fig. 29, the power supply of this unit is switched ON – OFF by the audio timer.

To set the musical alarm

1. Press the POWER switch to turn the power supply ON.
2. Operate the function button on the mother unit to be used for the musical alarm and leave adjusted to the appropriate sound level desired for the musical alarm.
   - When using a radio with FM, MW and/or LW, select the station you wish to hear.
   - When using a record, switch to PHONO and press the STOP button to allow the tonearm to return to its rest position on the armrest. If the tonearm is not on the armrest the record will not start playing when the POWER is switched ON. So be sure to press the STOP button to cause the tonearm to return to the armrest position.
   - When using a tape as the musical alarm source, switch unit to TAPE, push the STOP button at the tape position from which the musical alarm tune is to start.
3. Place TIMER START into the ON position.
4. Adjust the audio timer to the desired time and set the audio timer switch so that it switches ON when the set time is reached. (At this time, power ceases to flow to this unit.)

Recording Programmes in Your Absence

1. Prepare the recording tape.
2. Set the radio program you wish to record.
3. Switch the TIMER START to ON.
4. Press the REC PAUSE button to make the unit ready for recording. The REC PAUSE indicator will now light up.
5. Set the time switch on the audio timer. (At this time, power ceases to flow to this unit.)

- Be sure to perform step 4 immediately before you carry out step 5. (Press the REC PAUSE button again, even when the REC PAUSE indicator is illuminated and REC MUTE has been selected.)

*

USING A CONVENTIONAL MICROPHONE

Set the VOLUME control to a low volume level. (Fig. 9)

Insert the plug of the microphone into the MIC jack. (Fig. 30)
Set the Mixing control to the MIC position. (Fig. 31)

Switch on the microphone. (Fig. 32)

Select the desired volume with the VOLUME control. (Fig. 25)
Recording of sounds from the microphone is possible by putting the tape deck into the "RECORD" mode.
(Monaural Recording) (Fig. 33)

MIXING DISC OR TAPE PLAYBACK WITH MICROPHONE

Set the VOLUME control to a low volume position. (Fig. 9)

Insert the plug of the microphone into the MIC jack.
Switch on the microphone. (Fig. 34)

MIXING WITH RECORDS
Press the PHONO button. (Fig. 35)

MIXING WITH TAPE
Press the TAPE button.(Fig. 35)

Rotate the MIXING control to the center position.
Start the disc or tape playback.
Adjust the mixing level so as to suit for your taste. (Fig. 36)

Selet the desired volume with the VOLUME control. (Fig. 25)
Recording of mixed sounds (when using an accompanying record) is possible by putting the tape deck into the "RECORD" mode.
(Monaural Recording) (Fig. 37)

SPECIFICATIONS

AMPLIFIER SECTION

Min. RMS power output	20 watts per channel into 8 ohms load at 1 kHz with no more than 1.0% total harmonic distortion
Total harmonic distortion	0.04% at 1 kHz at half power
Input sensitivity/Impedance	
AUX	150 mV/50k ohms
MIC	1.5 mV/10k ohms
Tone controls	
BASS	±8 dB at 100 Hz
TREBLE	±8 dB at 10 kHz
Frequency response	30 – 20,000 Hz, ±1.5 dB

TUNER SECTION

FM section	
Tuning range	87.5 – 108 MHz (50 kHz step)
Usable sensitivity (IHF)	10.8 dBf (0.9 μV) – 75 ohms
Sensitivity (±40 kHz deviation)	
MONO	0.8 μV (S/N = 26 dB) – 75 ohms
STEREO	16 μV (S/N = 46 dB) – 75 ohms
Alternate channel selectivity (IHF, ±400 kHz)	60 dB
Selectivity (DIN, ±300 kHz)	55 dB
Signal to noise ratio (IHF)	
MONO	76 dB
STEREO	71 dB
Signal to noise ratio (DIN, weighted)	
MONO	70 dB
STEREO	65 dB
Total harmonic distortion (75 kHz deviation)	
MONO	0.2%
STEREO	0.5%
Capture ratio	1.5 dB
Image response ratio	45 dB
Spurious response ratio	70 dB
AM suppression ratio	50 dB
IF response ratio	80 dB
Stereo separation	
1 kHz	40 dB
10 kHz	35 dB
Frequency response	50 – 15,000 Hz, ±1 dB
MW section	
Tuning range	522 – 1,611 kHz (9 kHz step)
Sensitivity (IHF)	300 μV/m
Selectivity (±9 kHz)	35 dB
Signal to noise ratio	50 dB
Total harmonic distortion	1.0%
Image response ratio	30 dB
IF response ratio	40 dB
LW section	
Tuning range	146 – 353 kHz (9 kHz step)
Sensitivity (S/N = 26 dB)	1 mV/m
Signal to noise ratio	50 dB
Image response ratio	35 dB

TURNTABLE SECTION

Type	Vertical linear tracking
Drive system	Belt drive
Motor	DC servo motor
Platter	30 cm (12") diameter
Platter speeds	33-1/3, 45 rpm
Wow & flutter	0.06% Wrms
Signal to noise ratio	65 dB (DIN-B), 55 dB (IEC-B)
Tonearm	Linear tracking, straight, static balance
Cartridge	VM type
Tracking force	2.0 gr

CASSETTE TAPE DECK SECTION

Type	4-track, 2-channel stereo
Tape speed	4.75 cm/sec. (1-7/8 ips)
Head Materials	
REC/PB	Hard permalloy
ERASE	Ferrite
Wow & flutter	0.05% Wrms
Signal to noise ratio	
Dolby NR out	58 dB
Dolby NR in	68 dB
Frequency response	
Normal	30 – 16,000 Hz
Special	30 – 17,000 Hz
Metal	30 – 18,000 Hz
Crosstalk	
Between channels	35 dB
Between tracks	65 dB

GENERAL

Power consumption	120 W
Dimensions (W x H x D)	515 x 355 x 205 mm (20-5/16 x 14 x 8-1/8")
Weight	14.8 kg (32.7 lbs)
Accessories	T-shaped FM antenna, AM loop antenna, AM loop antenna holder, Black sheets 17, 30 cm (for transparent or coloured records), Batteries, 45 Adaptor

- "Dolby" and double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
  Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
- Specifications of this unit are subject to change without notice for improvement.

BEFORE TAKING YOUR Z-20 IN FOR SERVICING...

First check to ensure that all components are properly connected and operating normally. Then check the following:

GENERAL SYMPTOMS

SYMPTOM	CAUSE	REMEDY
• Power does not come on when the POWER switch in on.	• Power cord not completely plugged in. • Fuse has blown.	• Plug in completely. • Consult your authorized service dealer.
• No sound.	• Speaker leads not completely plugged in.	• Plug in completely.
• One channel only.	• Speaker leads not completely plugged in. • The BALANCE control is rotated to one side.	• Plug in completely. • Adjust the stereo balance with the BALANCE control.
• No stereo effect and poor bass.	• Speaker (+) and (–) are reversed.	• Correct the speaker leads connection.
• No reception even when pressing the operating button.	• Different function. • The built-in microcomputer has stopped functioning due to static electricity buildup (shock).	• There are functionless buttons for some functions. • Switch off the power once and then switch back on again.

SYMPTOMS IN MW, LW BROADCASTS

SYMPTOM	CAUSE	REMEDY
• Poor sound quality.	• Weak signal strength.	• Stretch out the supplied lead antenna, or install an outdoor antenna.
• Humming noise in the back ground.	• This is due to the direction in which the power plug was plugged in. • Due to other electric appliances on the same power circuit.	• Reverse the power plug. • Remove such electric appliances as heater an others.
• Beating noise.	• Due to interference between stations. Because of different receiving conditions, this system may be worth at night. • Due to interference of TV.	• Though it is difficult to eliminate it, shift tuning slightly. • Turn off the TV.
• Although no broadcast is being received, tuning indicator glows.	• Receiving noise signals.	• Change the direction of the antenna, or install antenna.

SYMPTOMS IN FM BROADCASTS

SYMPTOM	CAUSE	REMEDY
• Clacking noise.	• Car ignition interference. (It is difficult to correct without eliminating the source of noise.)	• Change the direction of the antenna. Put it as far as possible from the road. Substitute coaxial cable for 300 ohms flat twin lead.
• Hissing noise.	• Noise from electrical appliance.	• Install outdoor FM antenna and attach a good ground.

SYMPTOMS IN RECORD PLAY

SYMPTOM	CAUSE	REMEDY
• Reproduced sound is rough or, treble sound is not clear.	• Worn-out stylus. • Damaged record. • Dirt is deposited on stylus tip. • Improper stylus attachment.	• Replace the stylus. • Replace the record. • Clean the stylus tip. • Attach the stylus properly.
• Howling occurs.	• Sound vibration from the speakers are transmitted back to the tonearm and cartridge.	• Separate this unit from the speakers.
• Volume level difference between tuner and records.	• Signal strength and recording levels are different.	• This is not a fault, different source often vary in signal strength.
• Stylus skipping.	• Worn-out stylus. • Dirt is deposited on stylus tip. • Poor record (scratched, damaged, etc.) • Warped record. • Dirty record.	• Replace the stylus. • Clean the stylus tip. • Replace with a new one. • Replace with a new one. • Clean with a commercially available disc cleaner.

SYMPTOMS IN TAPE PLAY

SYMPTOM	CAUSE	REMEDY
• REC (Record) button cannot be depressed.	• No cassette inserted. • Tabs of cassette broken.	• Place the cassette in the cassette holder. • Cover the hole with cellophane tape, etc.
• Cannot recorded.	• Heads dirty.	• Clean heads.
• Distorted sound recording.	• Heads dirty.	• Clean heads.
• Bad SN ratio in recorded sound (High noise level.) .	• Heads magnetized.	• Demagnetize heads.
• Cannot playback.	• Heads dirty.	• Clean heads.
• Small sound volume.	• Heads dirty.	• Clean heads.
• Poor sound quality.	• DOLBY NR switch incorrectly switched. • Heads dirty.	• Set DOLBY NR switch correctly. • Clean heads.
• Failure to erase previous recording.	• Erase head dirty.	• Clean head.
• Beat sound recorded on MW, LW broadcast.	• Due to the interference from deck section.	• Stretch out the loop Antenna.